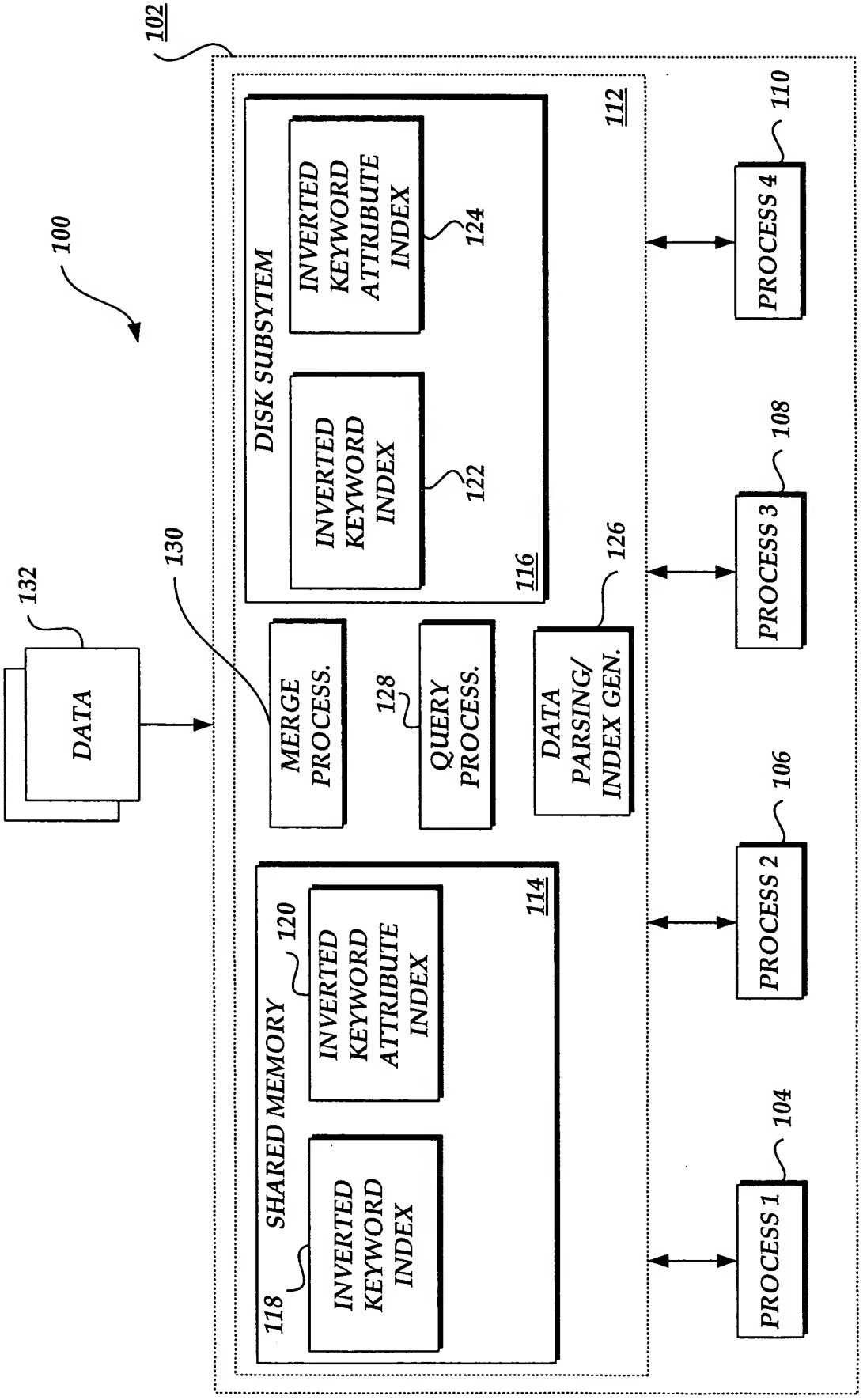

100
102
DISK SUBSYTEM
INVERTED KEYWORD ATTRIBUTE INDEX
124
INVERTED KEYWORD INDEX
122
116
112
110
PROCESS 4
108
PROCESS 3
126
DATA PARSING/ INDEX GEN.
128
QUERY PROCESS.
130
MERGE PROCESS.
132
DATA
SHARED MEMORY
120
INVERTED KEYWORD ATTRIBUTE INDEX
118
INVERTED KEYWORD INDEX
114
106
PROCESS 2
104
PROCESS 1

Fig.1.

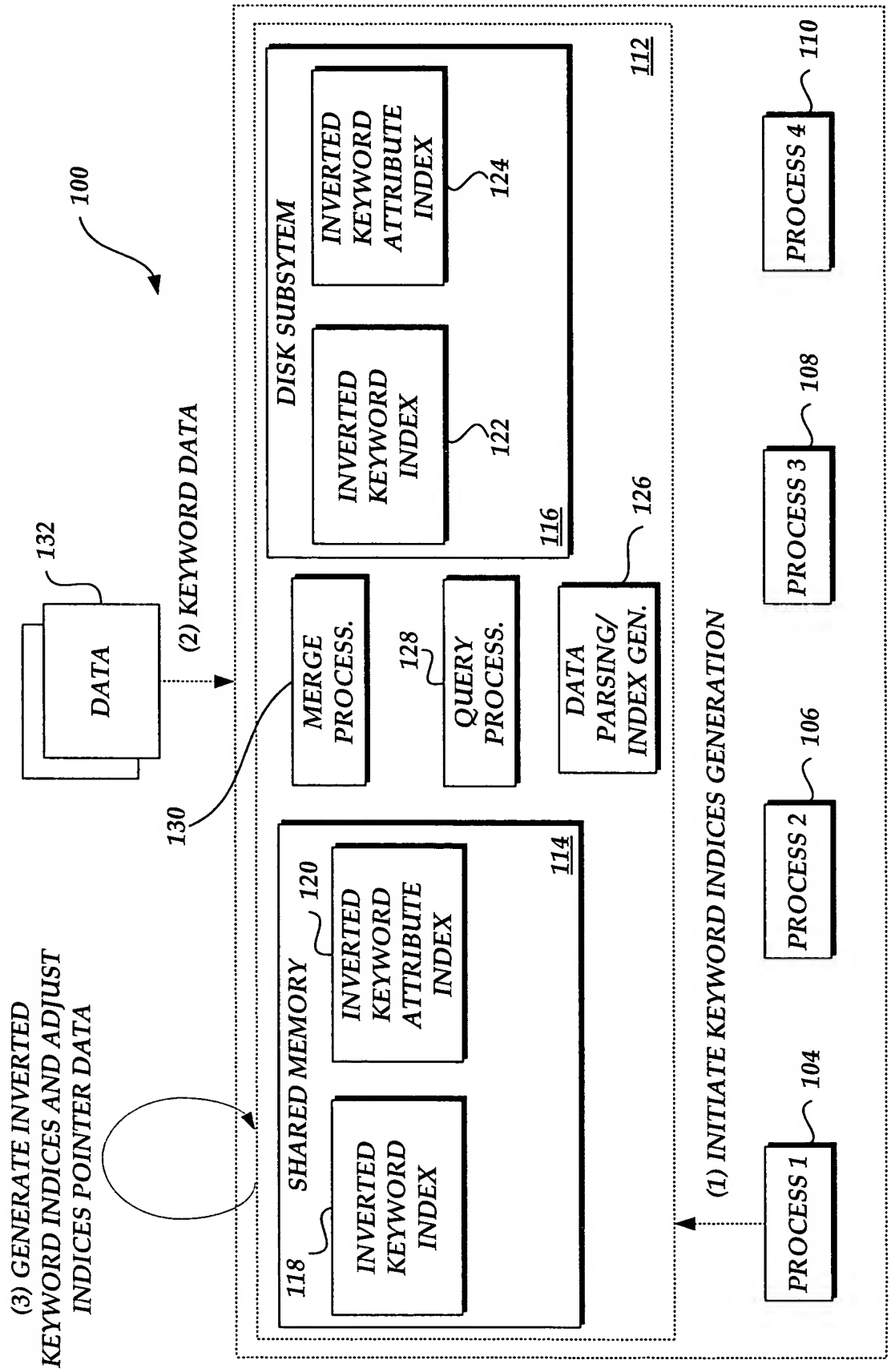

100
(1) INITIATE KEYWORD INDICES GENERATION
PROCESS 1
104
PROCESS 2
106
PROCESS 3
108
PROCESS 4
110
112
DISK SUBSYSTEM
INVERTED KEYWORD INDEX
122
INVERTED KEYWORD ATTRIBUTE INDEX
124
116
DATA PARSING/ INDEX GEN.
126
QUERY PROCESS.
128
MERGE PROCESS.
130
(2) KEYWORD DATA
DATA
132
SHARED MEMORY
114
INVERTED KEYWORD INDEX
118
INVERTED KEYWORD ATTRIBUTE INDEX
120
(3) GENERATE INVERTED KEYWORD INDICES AND ADJUST INDICES POINTER DATA

Fig.2.

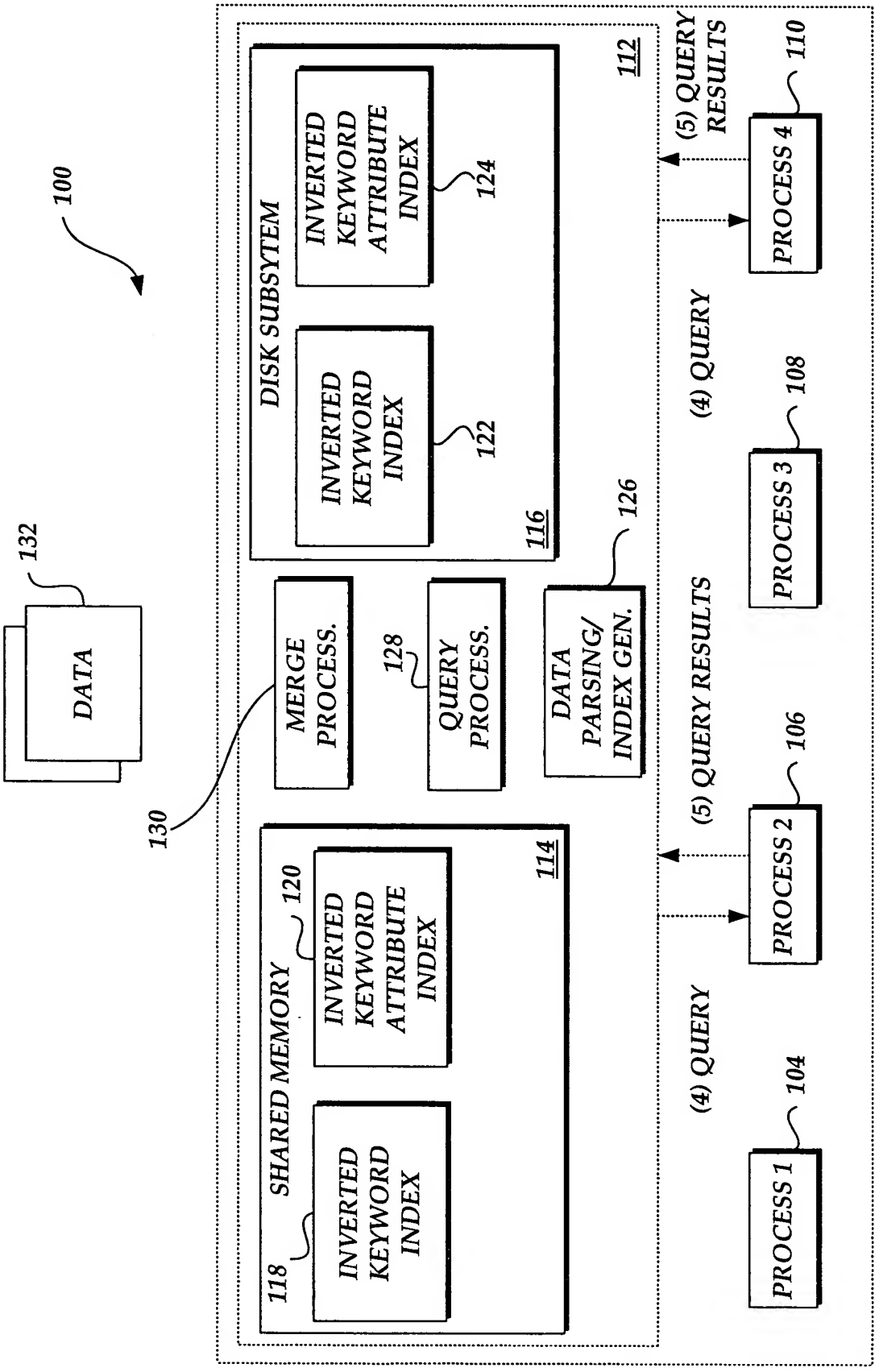

100
132
DATA
130
DISK SUBSYTEM
INVERTED KEYWORD ATTRIBUTE INDEX
124
INVERTED KEYWORD INDEX
122
116
112
MERGE PROCESS.
128
QUERY PROCESS.
DATA PARSING/ INDEX GEN.
126
SHARED MEMORY
120
INVERTED KEYWORD ATTRIBUTE INDEX
118
INVERTED KEYWORD INDEX
114
(4) QUERY
(5) QUERY RESULTS
PROCESS 1
104
PROCESS 2
106
PROCESS 3
108
PROCESS 4
110

Fig.3.

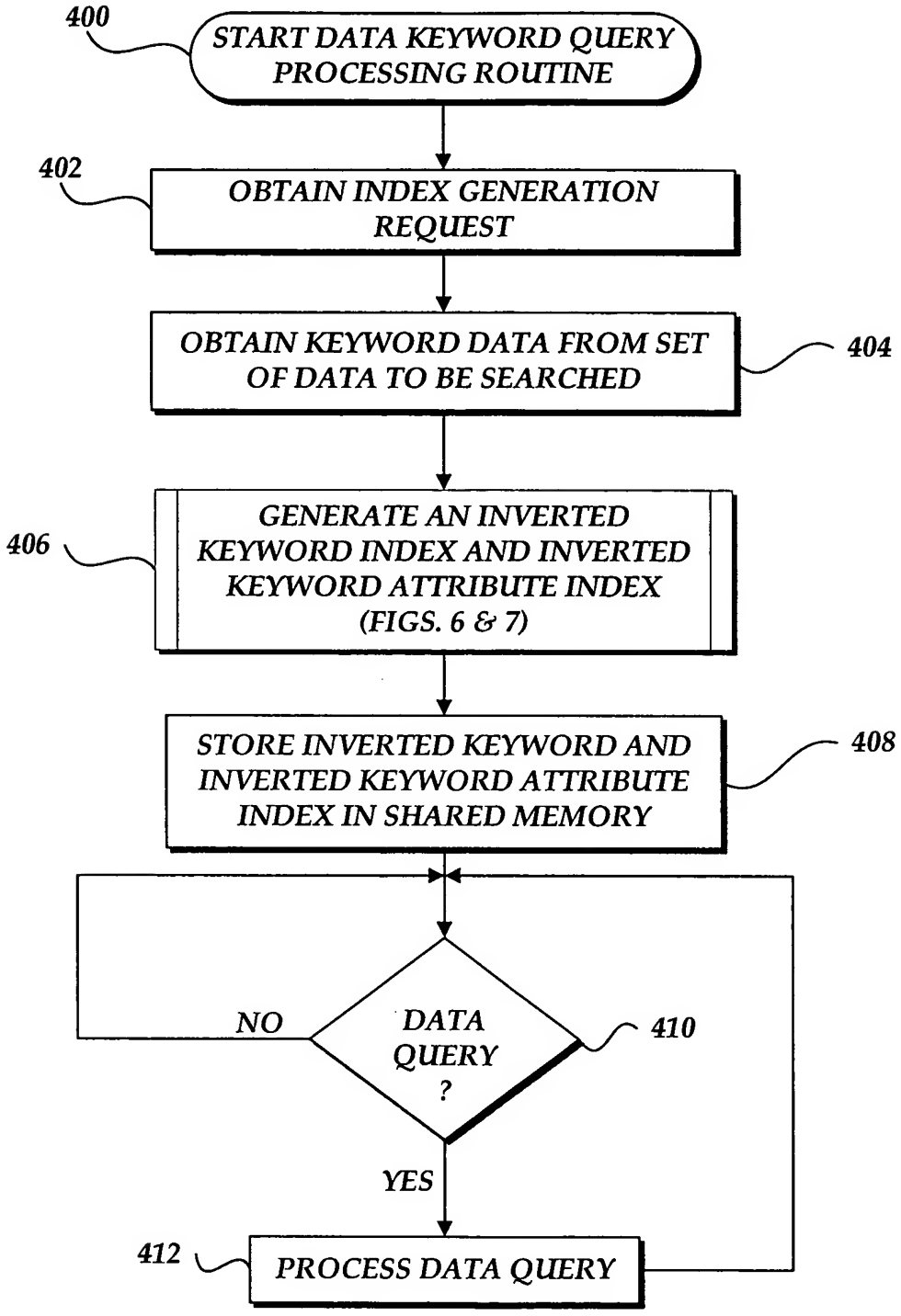

400
START DATA KEYWORD QUERY PROCESSING ROUTINE
402
OBTAIN INDEX GENERATION REQUEST
OBTAIN KEYWORD DATA FROM SET OF DATA TO BE SEARCHED
404
406
GENERATE AN INVERTED KEYWORD INDEX AND INVERTED KEYWORD ATTRIBUTE INDEX (FIGS. 6 & 7)
STORE INVERTED KEYWORD AND INVERTED KEYWORD ATTRIBUTE INDEX IN SHARED MEMORY
408
NO
DATA QUERY ?
410
YES
412
PROCESS DATA QUERY

Fig.4.

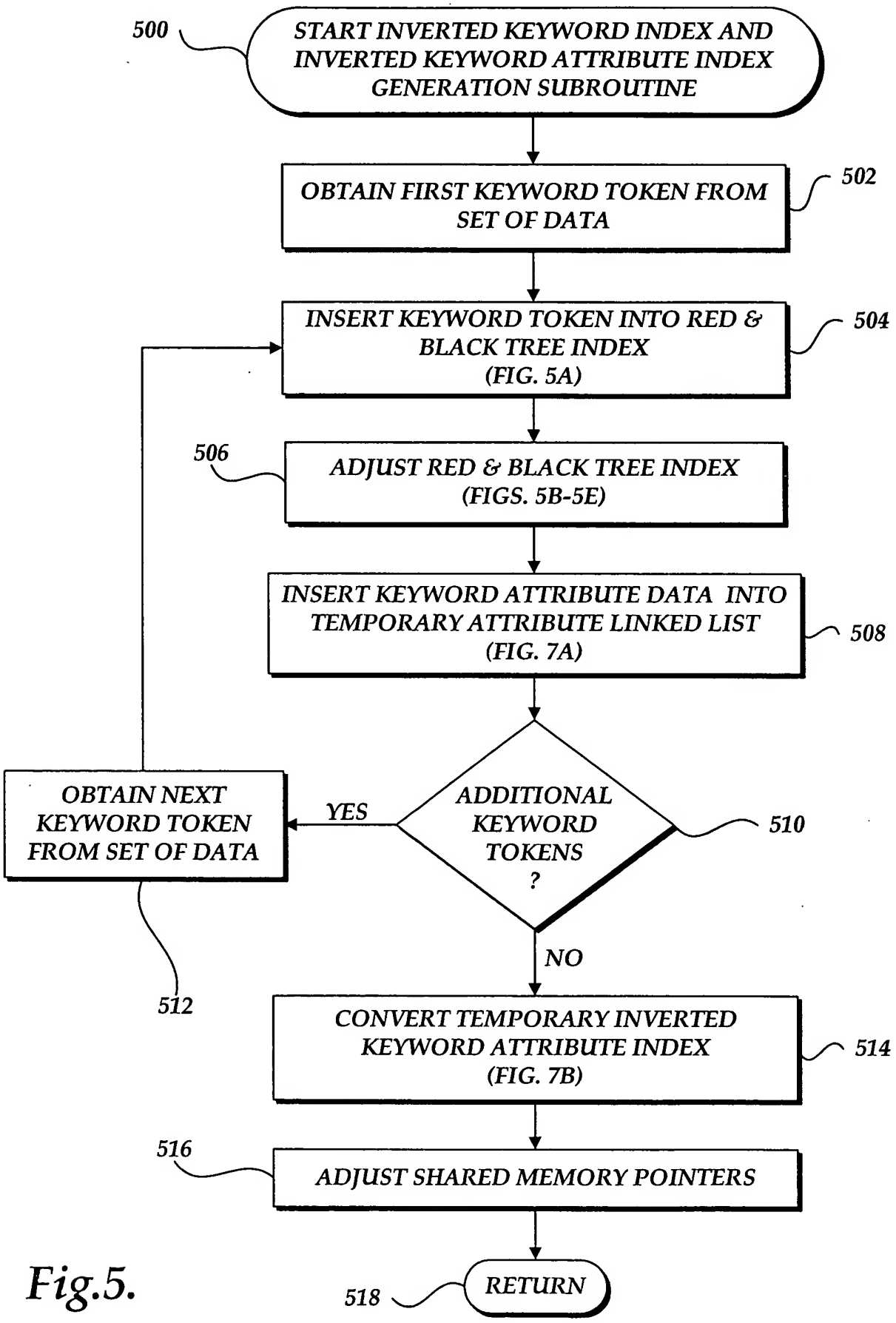

500
START INVERTED KEYWORD INDEX AND INVERTED KEYWORD ATTRIBUTE INDEX GENERATION SUBROUTINE
OBTAIN FIRST KEYWORD TOKEN FROM SET OF DATA
502
INSERT KEYWORD TOKEN INTO RED & BLACK TREE INDEX (FIG. 5A)
504
506
ADJUST RED & BLACK TREE INDEX (FIGS. 5B-5E)
INSERT KEYWORD ATTRIBUTE DATA INTO TEMPORARY ATTRIBUTE LINKED LIST (FIG. 7A)
508
ADDITIONAL KEYWORD TOKENS ?
510
YES
OBTAIN NEXT KEYWORD TOKEN FROM SET OF DATA
512
NO
CONVERT TEMPORARY INVERTED KEYWORD ATTRIBUTE INDEX (FIG. 7B)
514
516
ADJUST SHARED MEMORY POINTERS
518
RETURN

Fig.5.

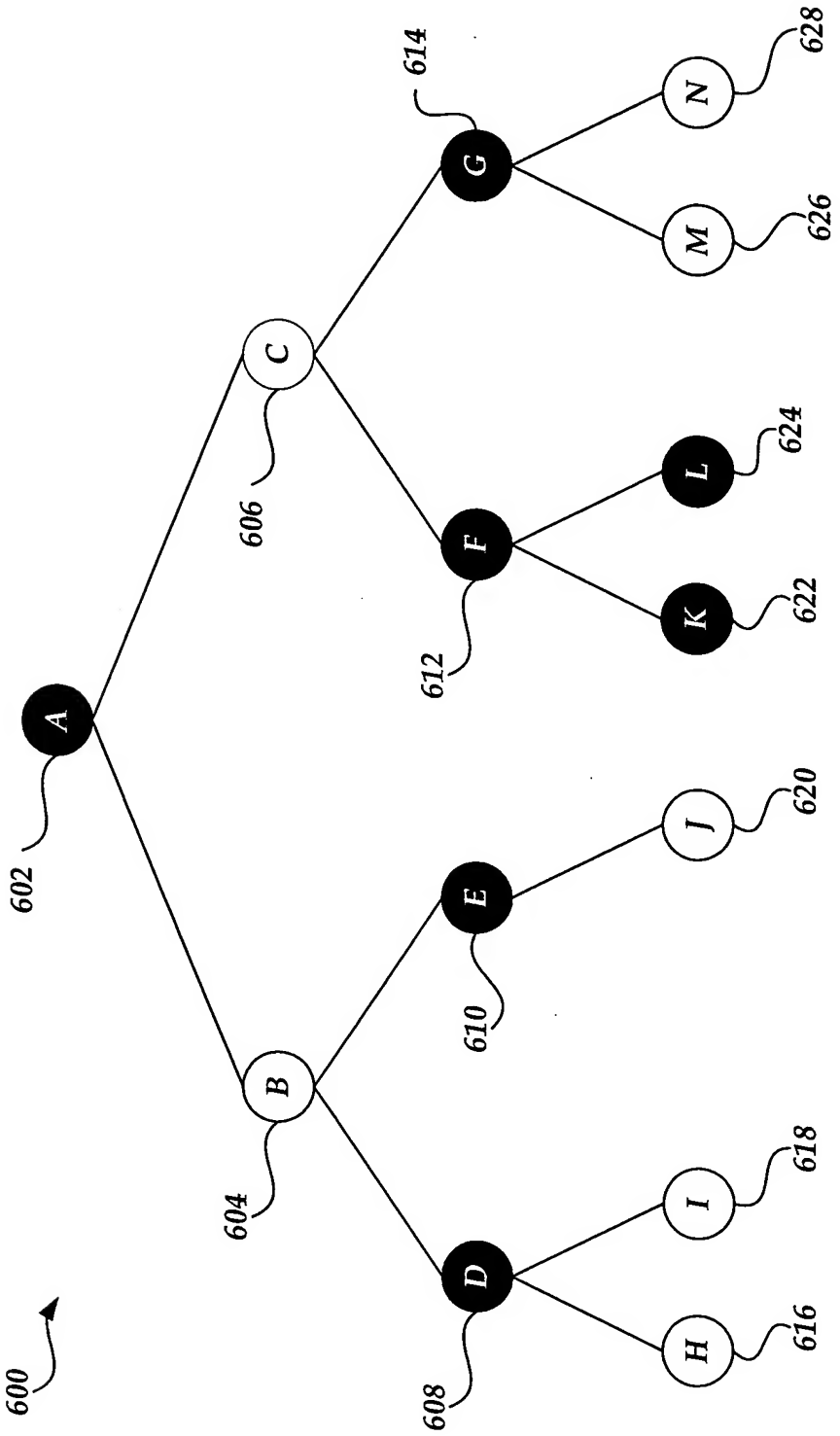

600
602
A
604
B
606
C
608
D
610
E
612
F
614
G
616
H
618
I
620
J
622
K
624
L
626
M
628
N

Fig.6A.

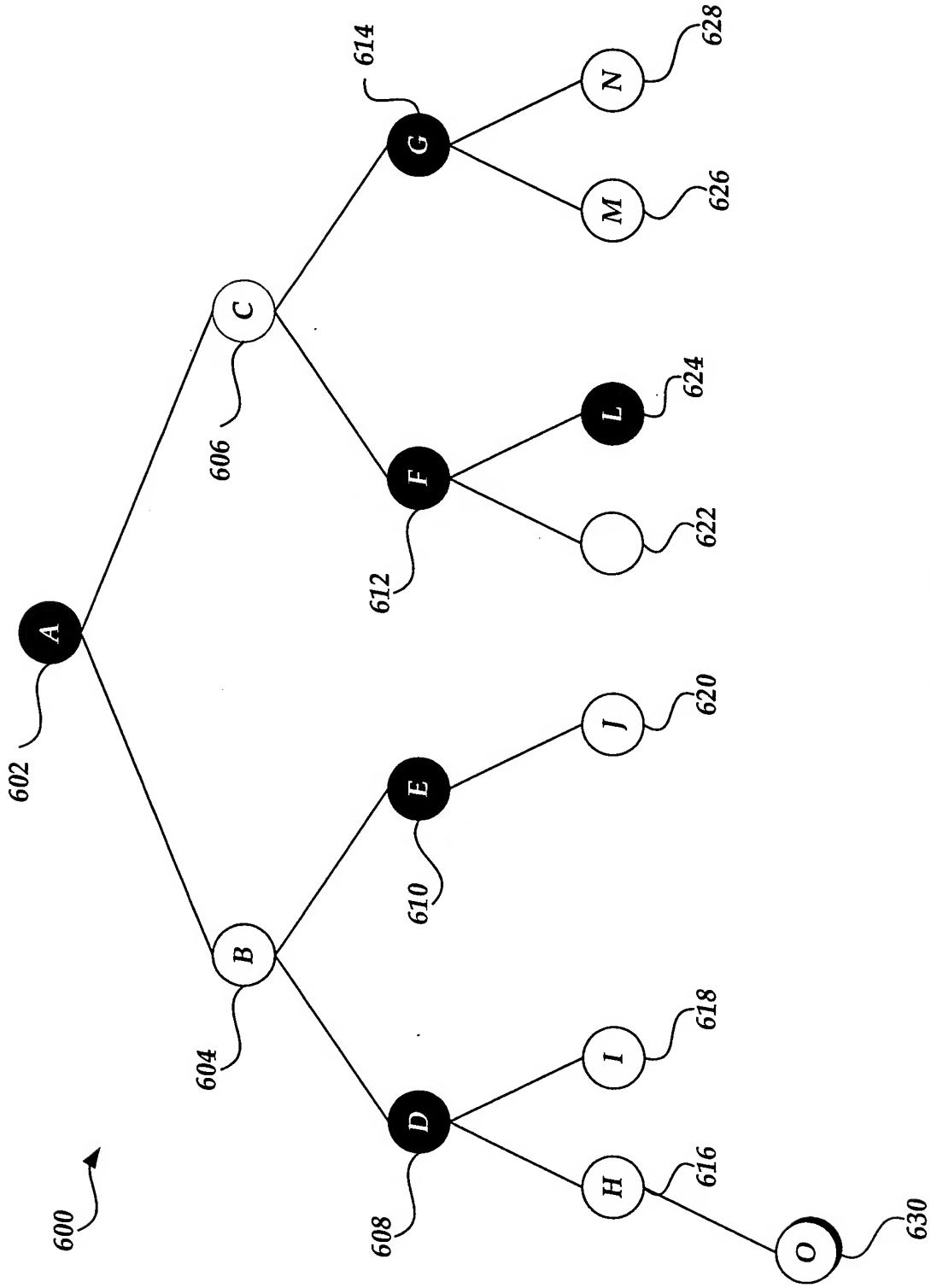

600
602
604
606
608
610
612
614
616
618
620
622
624
626
628
630
A
B
C
D
E
F
G
H
I
J
L
M
N
O

Fig.6B.

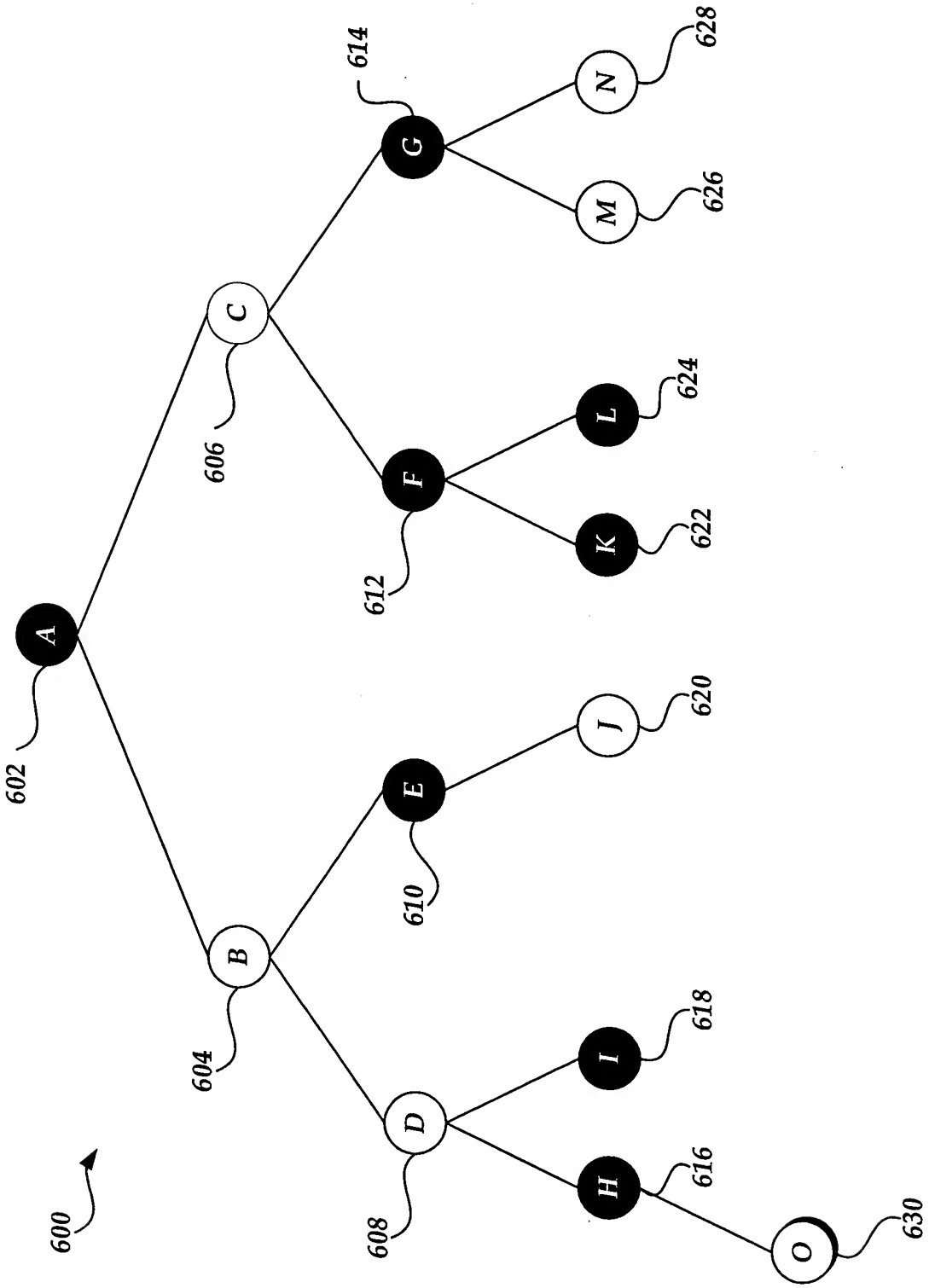

600
602
604
606
608
610
612
614
616
618
620
622
624
626
628
630
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

Fig.6C.

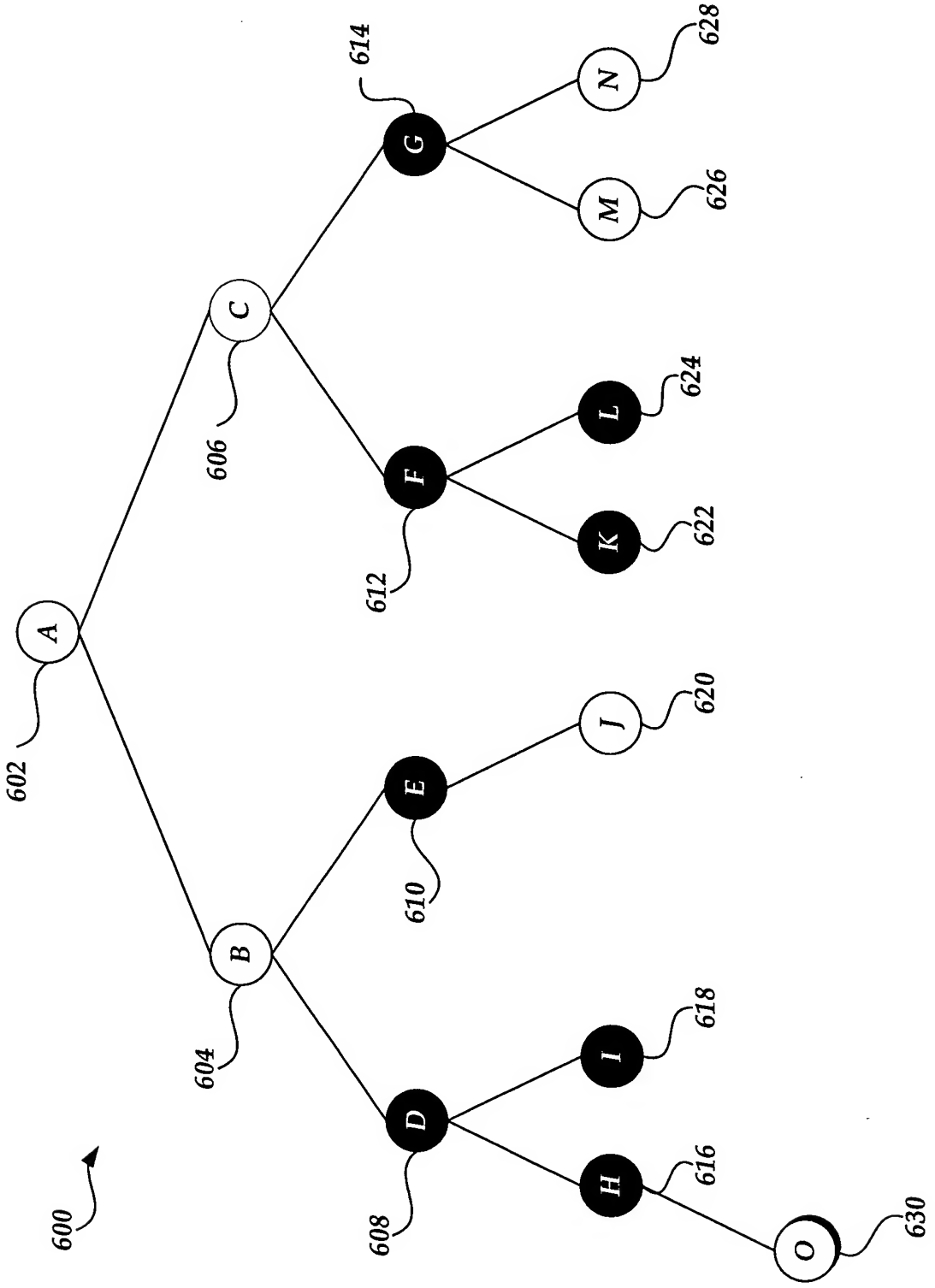
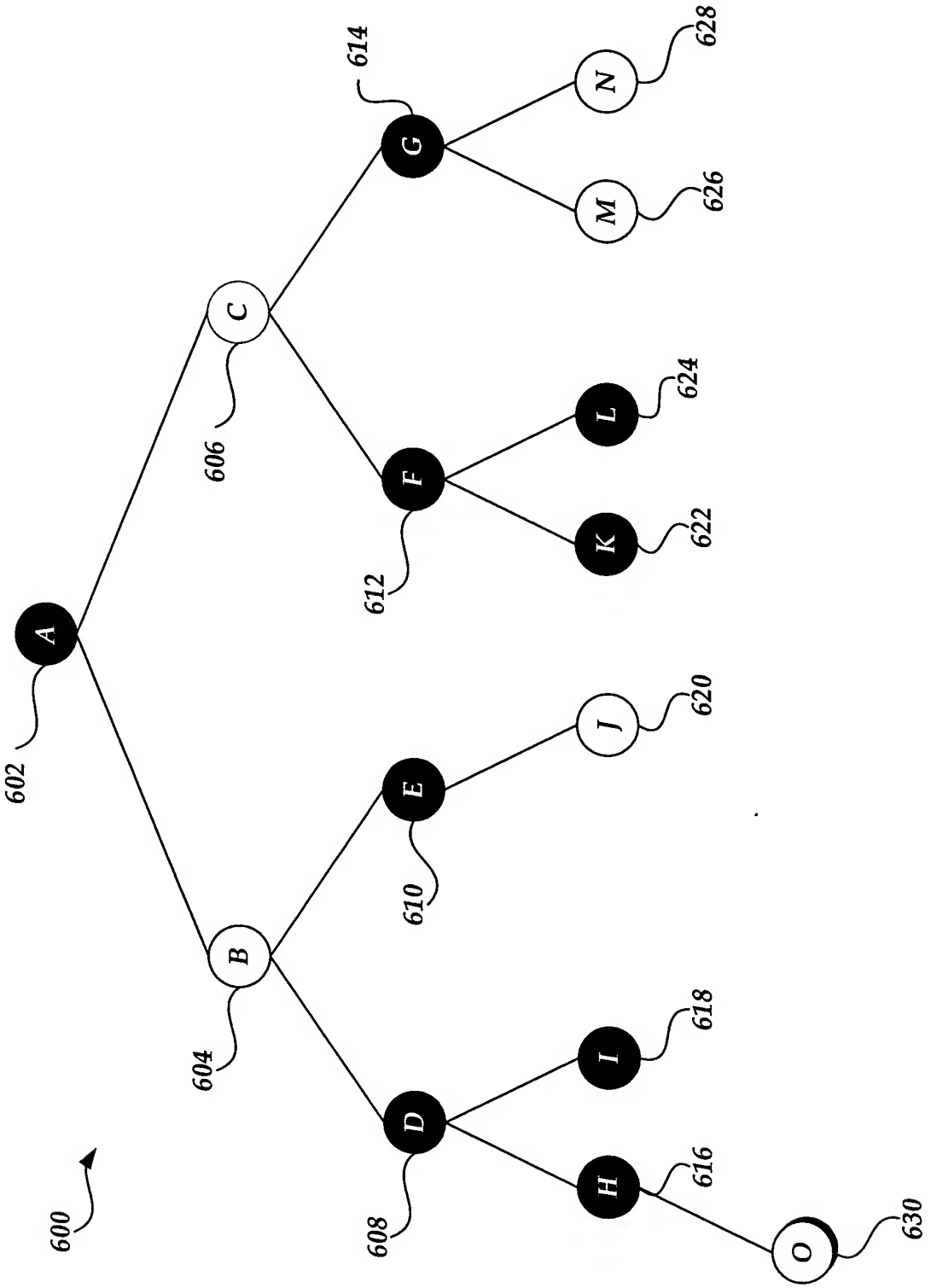

600
602
A
604
B
606
C
608
D
610
E
612
F
614
G
616
H
618
I
620
J
622
K
624
L
626
M
628
N
630
O

Fig.6D.


600
602
604
606
608
610
612
614
616
618
620
622
624
626
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630
A
B
C
D
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J
K
L
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N
O

Fig.6E.

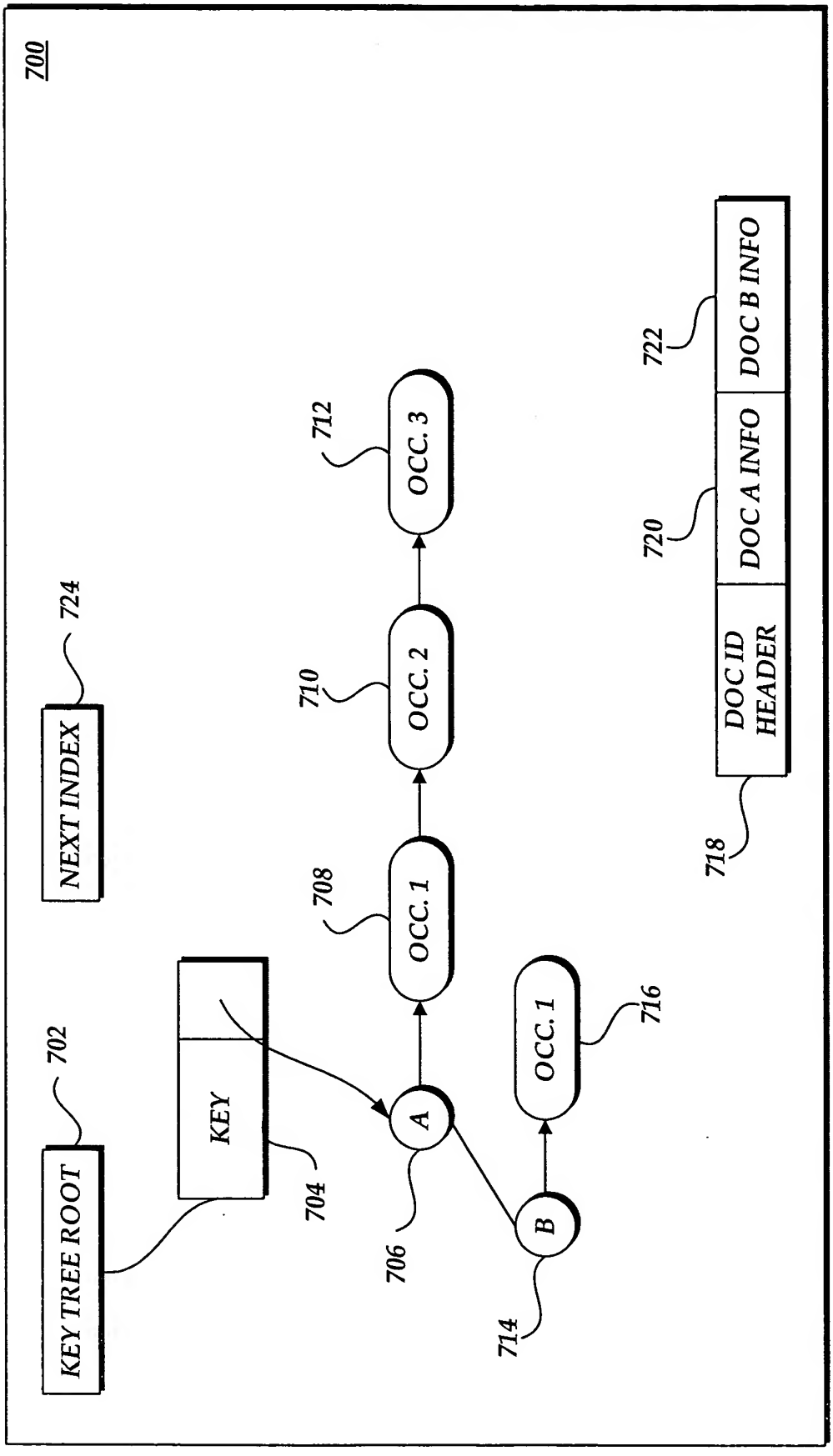
700
KEY TREE ROOT
702
NEXT INDEX
724
KEY
704
A
706
B
714
OCC. 1
716
OCC. 1
708
OCC. 2
710
OCC. 3
712
DOC ID HEADER
718
DOC A INFO
720
DOC B INFO
722

Fig. 7A.

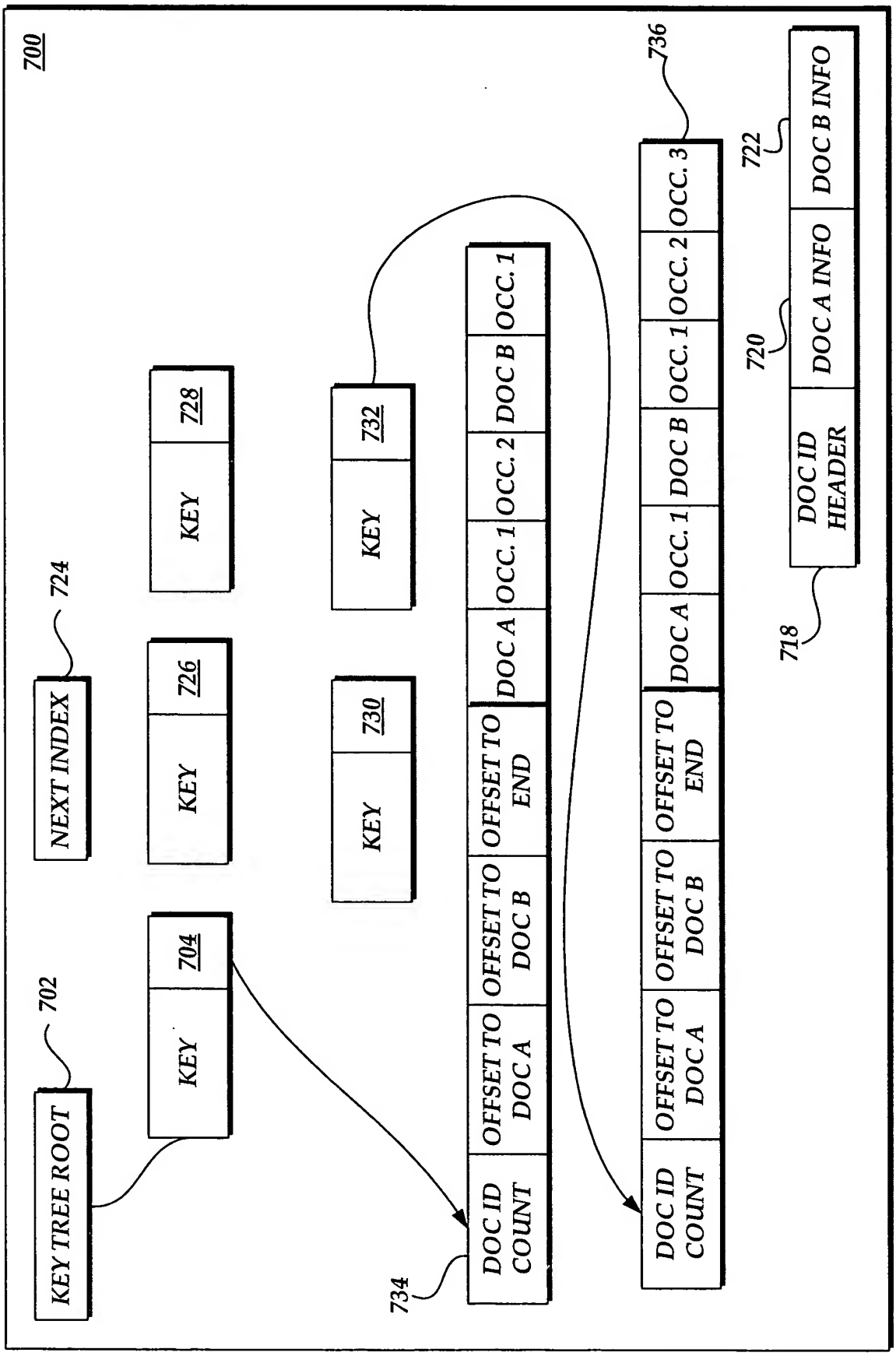
700
KEY TREE ROOT
702
KEY
704
NEXT INDEX
724
KEY
726
KEY
728
KEY
730
KEY
732
DOC ID COUNT
OFFSET TO DOC A
OFFSET TO DOC B
OFFSET TO END
DOC A
OCC. 1
OCC. 2
DOC B
OCC. 1
734
DOC ID COUNT
OFFSET TO DOC A
OFFSET TO DOC B
OFFSET TO END
DOC A
OCC. 1
DOC B
OCC. 1
OCC. 2
OCC. 3
736
718
DOC ID HEADER
720
DOC A INFO
722
DOC B INFO

Fig. 7B.